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ABSTRACT

Two basic problems are confronted in this research: (1) What is sex role differentiation?, and (2) How does one go about measuring it? Both questions revolve around construct validity and the adequacy of sex role measures. Most investigators have used dependent "objective-verbal" tests to measure sex role differentiation. These either involve questions about the differences between boys and girls, or the presentation of toys appropriate for one sex or another along with questions regarding their appropriateness. This study examines the construct validity of these "objective-verbal" tests. Comparative data on sex role differentiation in preschool children were collected from "objective-verbal" tests and naturalistic observations. One-hundred fifty-two 3-5 year-olds were administered the It-test, the Occupational Preference Test, the Nadleman Recall Test, the DeLucia Toy Preference Test, and the Draw-A-Person test. They were observed in their classrooms approximately once every two weeks, with observers noting instances of aggressive, dependent, and cooperative behavior. Child-child and teacher-child interactions were also observed. Findings showed dependent behaviors to be most frequent, with agressive behaviors next; cooperative behaviors were rare. When correlations were made results demonstrated that children who scored low, or less masculine on the sex role tests showed more dependent behaviors than children with high masculine scores. Evidence also strongly supported the belief that children with high masculine scores on the objective tests behaved more aggressively. (Author/MV)

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Measuring Sex Role Development: A Comparison of Two Methods

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Paper presented at the forty-eighth annual meeting of the Eastern Psychological Association, April 14, 1977, Boston, Massachusetts

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Measuring Sex Role Development: A Comparison of Two Methods

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Sex role differentiation has been of interest to psychologists for many years. Perhaps given added impetus by the women's movement, there has been a recent proliferation of studies dealing with this topic. These studies frequently have yielded conflicting results, and many questions about how differences between the sexes develop and what these differences actually are remain to be answered. Part of the problem may be attributed to the techniques used to measure sex role differentiation. We feel that such issues must be addressed and incorporated into research designs in order for sex role differentiation to be fully understood. The papers comprising the present symposium deal with a number of different yet related issues bearing upon the problems of measurement.

When an investigator decides to research the area of sex roles, she immediately confronts two basic yet extremely important problems. The first is, "What is sex role differentiation," i.e., what is it exactly that I want to measure? The second is, "How can I go about measuring it, whatever it is." In other words, what instruments can I use? Both of these questions revolve around issues of construct validity and of the adequacy of the sex role measures. These are interactive rather than orthogonal issues. For example, different tests purport to measure sex role differentiation, sex role identity, sex role preference, sex role adoption, sex typing, sex role knowledge, etc.; the list of terms is a long one. Although the terms are frequently used interchangeably and the results from different tests are compared, there is no evidence to confirm that these tests all measure the same underlying construct. Nor do we know whether this underlying

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construct is being adequately measured by the tests. Most investigators have used dependent measures characterized as "objective-verbal." Typically, the child is asked to answer questions about differences between boys and girls; or the child is presented with toys appropriate for one sex or the other and asked to show (either verbally or by pointing) knowledge of the differential appropriateness. Additionally, the directions to the child may require a direct response (e.g., What do you want to be when you grow up?) or they may be projective (e.g., "Choose the toy that "IT" would like to play with.").

Such methods have frequently been criticized on grounds of reliability and validity: How reliable and valid are these verbal measures, especially when used with young children? Wouldn't more valid and representative measures of sex role differentiation consist of actually going out into the field and observing the everyday behavior of the children? How would sex role scores derived from the naturalistic observations relate to scores on the verbal measures? Are both measures of the same construct?

These are all important questions. To answer them, it seems clear that one must combine both types of measures in the same study. The study that I am going to discuss does just this.

The data I will discuss come from a large multifaceted investigation of sex role differentiation during the preschool years. The major tasks of the larger study are as follows: (1) to clarify what is meant by sex role differentiation, (2) to examine the relation between age and sex role differentiation, and (3) to investigate how certain variables (such as SES, peer interaction, and teacher-child interaction) affect the rate and direction of sex role differentiation.

Using an incomplete cohort-sequential design, over 400 three-, four-, and five-year-old boys and girls (equally divided between public daycare and private nursery schools) are being followed throughout their nursery school careers. Information on sex role differentiation is available from two sources: the chil-

dren are pretested and posttested each year on five measures of sex role development (and one measure of intelligence). Additionally, the child-, teacher-, child-child, and child-teacher behaviors are observed at two week intervals in the naturalistic environment of the preschool classrooms.

Tonight, I will confine my remarks to a small portion of our first year results. I will first describe our measures. Then I'll examine sex role differentiation as measured by naturalistic observations of aggressive, dependent, and cooperative behaviors of preschoolers. These three classes of behaviors were chosen since they are dimensions of personality, traditionally associated with sex differences. Finally, I will deal with the too-often-ignored problem of construct validity by comparing the children's scores on the verbal tests to their scores on the naturalistic measures.

First, the measures:

The Objective Tests

One thing we wanted to see was whether various tests of sex role differentiation all measure the same thing. Therefore, the following battery of tests is being administered to each child individually during the first few weeks (pretests) and the last few weeks (posttests) of each school year.

a. Intelligence: The Peabody Picture Vocabulary (Alt. forms)

b. Sex role measures:

1. Draw-A-Person Test (DAP): The child is asked to draw a person, and then to draw a picture of a person of the opposite sex. The test assumes stronger identification with the first figure drawn, and also evaluates the degree of differentiation between the two figures (Brophy and Laosa, 1973).

2. Differential Memory for Masculine and Feminine Items (Nadleman Recall Test) (NRT): This is a modification of Nadleman's 1973 procedure for measuring sex typing. Children are presented with

pictures of a same sex child. They are then shown pictures of 24 pairs of masculine and feminine toys and are asked to specify which the girl/boy would like to play with.

3. DeLucia's Toy Preference Test (TPT): In this modification of DeLucia's 1963 test of sex role identification, subjects are presented with a picture of a same sex child. They are then shown pictures of 24 pairs of masculine and feminine toys and are asked to specify which the girl/boy would like to play with.

4. IT-Test (BIT): Biller's (1968) modification of Brown's (1956) procedure is used to control for the masculine appearance of "IT". Subjects are shown a line drawing of a face (that is then called "a child" rather than "It"). The subject is asked to make choices for the child from among a series of pictures of masculine and feminine toys, peers, and activities. Brown calls the "It" a measure of sex role preference. Biller's modification is thought measure sex role identification.

5. Occupational Preference Test (OPT): Children are asked to tell what they want to be when they grow up. The are asked to give three choices. This is thought to measure sex role preference.

All of the tests were scored so that a high score indicates high masculinity. The internal consistency reliability correlation of a composite score based on scores on the various tests was .77.

The Observations

Thirteen observations were completed on each class between October and April of the first year. One male and one female observer (both naive as to the purpose of the study) alternately visited each class every two weeks.[2] One half-hour was spent focussing on the children, and another half-hour on the teachers. Only indoor activity was recorded. A time-sampling technique was used: the observer scanned the room for 45 seconds of each minute, noting (for each occurrence of each pre-specified behavior) the actor, the target of the action, whether there was a response to this action, and if so, what this response was and who it was directed towards. The activity or toy being played with was also noted.

The CHILD BEHAVIORS being observed are (classified traditionally):

Dependent Behaviors: Seeks Proximity; Seeks Physical Contact; Clings; Seeks Reassurance; Seeks Attention Positively/Negatively; Seeks Help for Something C Can/Cannot Do; Fantasy Play (Female/Child); Obey/Disobey; Cries; Joins.

Aggressive Behaviors: Grabs, Takes, Hits; Punches, Kicks; Teases, Calls Names; Criticizes; Threatens; Gets Powerful Adult to Intervene; Asserts Self; Leads; Yells at, States Wants; Directs Others; Fantasy Play (Male).

Cooperative Behaviors: Helps Spontaneously/At Another's Request; Shares Spontaneously/At Another's Request; Child Plays in Group Organized to Make Something; Plays in Group Organized to Attain a Competitive Goal; Plays in Group to Dramatize Adult and/or Group Life; Plays in Group Organized to Play a Formal Game.

BEHAVIORS OF THE TEACHERS which could possibly reinforce dependency, aggressive, or cooperative behavior in the children were selected for observation. They include Comforts Physically/Verbally; Physically Touches, Hugs (No Comfort);

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[2] The observations were done by Adrienne Burghausser and Joseph O'Connor.

Smiles/Frowns At; Praises, Approves; Ignores; No Response; Reprimands Loudly/Softly; Insists C Return Something Taken; Insists C Apologize; Other Insist; Prohibits Verbally/Physically; Asks Questions; Answers, Responds to; Talks to, Explains, Instructs; Encourages Masculine/Feminine Role; Encourages C to do Task; Directs Activity; Initiates Activity; Encourages Sharing/Helping/Turn Taking/C to Join Ongoing Activity; Initiates Group Activity.

Reliability (# of agreements/# of disagreements and # of agreements) ranged from 75-90%. Reliability observations were conducted every month-and-a half throughout the observation period.

The results that I will present tonight refer to a subset of subjects and data from the larger study. Specifically, because of time considerations, we have chosen a sample of 152 children from four classes in the private nurseries and four classes in the public daycare centers. Eighty of the children are males; 72, females. In the present paper, I will also discuss only behaviors that were initiated by the children. Also, only five observations per class, spread across the year, are included. The data dealing with child responses, teacher behaviors (both initiating and responsive), child-child and teacher-child interactions will be the subject of future papers. Thus, on this selected sample, we will consider the aggressive, dependent, and cooperative scores as observed in the classroom on five observations and the pre- and posttest scores on the five sex role tests.

RESULTS AND DISCUSSION

In dealing with the observational data, we first generated a matrix showing the frequency with which each subject showed each individual behavior across all five of the observations. We then collapsed the individual behaviors into the more general traditional categories of aggression, dependency, and cooperation We also determined the rates of aggressive, dependent, and cooperative behaviors

for each child by separately dividing the number of behaviors in each of the three categories by the total number of behaviors shown by each subject. These rates were included to control for inter-subject differences in frequency of behavior. The data I will present today will deal only with the subjects' frequencies and rates on behavior in regard to the collapsed categories; the individual behavior analyses will be treated in a future paper. All of the differences I will describe as significant reached at least the .05 level of confidence.

The first question to be answered is, "Do aggressive, dependent, and cooperative behaviors show differential frequencies and/or rates of occurrence in nursery school children?" The answer is clearly, yes. In terms of frequencies, an average of 12.55 behaviors were recorded for each child. Of these, 2.50 fell into the category of Aggression; 6.66 into the Dependent category; .349 into the Cooperative behaviors. This is expected with children between three and five years of age.

The second major question to be addressed is, "Do naturalistic observations differentiate between boys and girls?" To answer this, we applied a series of one-way ANOVA's to compare the boys and girls as to both the frequencies and rates of Aggressive, Dependent, and Cooperative behaviors. Boys and girls did not differ in terms of total amounts of behavior: on the average, boys emitted 12.12, and girls, 13.03 behaviors ($F = .47$, $p < .51$). Nor did they show differential frequencies or rates of Cooperative (or Miscellaneous) behaviors: for boys, the average frequency of cooperative behavior was .362, while for girls, it was .333 ($F = .08$, $p < .69$). The rates of cooperative behavior were .031 and .023 for boys and girls, respectively ($F = .825$, $p < 369$). However, when one examines aggression and dependency behaviors, one finds highly significant differences. For boys, the average frequency of aggressive behavior was

3.35; for girls, 1.56 ($F = 16.64$, $p < .000$). The rate for boys was .242; for girls, .124 ($F = 19.638$, $p < .000$). For Dependence, the boys showed an average of 5.54 dependent behaviors, while the girls showed a mean of 7.90 dependent behaviors ($F = 7.22$, $p < .008$). The comparable figures for rates of dependent behaviors were .462 and .574 for boys and girls, respectively.

Thus, by using naturalistic observations, we find firm evidence that boys and girls, even of nursery school age, differ significantly in the amount of dependent and aggressive behaviors (i.e., sex-typed behaviors) that they show.

Now the question is how do these results compare to results from data based on "verbal-objective" tests? I examined the relations between the "objective" test scores and the observed Aggressive, Dependent, and Cooperative behaviors, by three different methods. First, I correlated the subjects' scores on each of the five pretests, each of the five posttests, and pretest composite score, and a posttest composite score with the subjects' frequencies and rates of Aggressive, Dependent, and Cooperative behaviors, and with the total amount of behavior emitted by the subject (i.e., There were 12 test scores being correlated with each of 7 behavioral measures.) In regard to aggression, all of the pretests, and all of the posttest scores ALL correlated positively and significantly with the frequency of aggressive behaviors: 7 of the 12 correlations were significant at at least the 1% level; the other 5 were significant at $p < .05$. All of the correlations between the test scores and rate of aggression were even more strongly related: all correlations were positive and significant, with all but 1 (the posttest Nadleman) significant at at least $p < .01$; for the Nadleman posttest and rate of aggression, the correlation was significant at $p < .05$. This differential with the Nadleman may be due to the relatively less stereotypic nature of the items on this test. In any case, we have extremely strong evidence that children with high masculine scores on the objective tests also actually

behave more aggressively.

With regard to dependence, the frequency of dependent behaviors correlated negatively and significantly with two of the pretests (the DAP and the NRT), and approached significance with the OPT, and with the BIT ($p > .05 < .10$). Four of the posttests (the DAP, OPT, NRT, and BIT) also were negatively and significantly ($p < .05$) related to the frequency of dependent behaviors. The correlation with the posttest composite score approached significance ($p > .05 < .10$). When we look at the correlations between the tests and the rates of dependent behaviors, the evidence is even stronger: significant, negative correlations were found between rates of dependent behaviors and all test scores except the pretest TPT and the pretest OPT. To sum up the findings in regard to dependency, children who scored low, or less masculine on the sex role tests showed more dependent behaviors than children with high masculine scores.

On the whole, cooperative behaviors were unrelated to scores on the tests: the only significant correlations were between the posttest TPT, and the posttest composite scores and rate of cooperative behavior. This is not at all surprising, given the extremely low frequency of cooperative behaviors observed.

Thus, we have seen that the test scores correlated in the expected direction with observed aggression and dependency, but not with cooperation.

The second method of examining the construct validity of the tests was to enter the 5 pretest and 5 posttest scores into a factor analysis, with the rates of aggression, dependency, and cooperation. The results are consistent with those from the correlational analysis: All of the tests, as well as the rate of aggression, and rate of dependency, all loaded on the first factor (which accounted for 76.2% of the variance[3]).

The third method of looking at the relations between the sex role tests and

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[3]Principal Factor with Iterations

the observed aggressive, dependent, and cooperative behaviors was to compute canonical correlations between the pretests and the behaviors, and between the posttests and the behaviors. Canonical correlations derive a factor from both sets of variables which are maximally related. In the present context, the canonical correlation for the pretests with the behaviors was .50 ($p < .05$), and for the posttests with the behaviors, .49 ($p < .05$).

So what can we conclude? I must admit that when I started this research, I worked on the, at least implicit, and oft times explicit, assumption that the objective tests of sex role differentiation were seriously lacking and that better dependent measures were needed. I find that I must now at least temper my pre-conceived beliefs with the knowledge that I have, in fact, seen the first real evidence for the construct validity of the tests. This by no means is meant to suggest that verbal tests can or should be used to the exclusion of observations.

The correlations between the scores from the two types of measures are far from perfect, the measures do not show factor loadings of 1, and the behaviors are not perfectly predictable from the tests. To the extent that the tests and observations are NOT perfectly related, they may be providing us with information about different aspects of sex role differentiation. For example, we found more significant correlations between aggressive behaviors and the sex role test scores, than between dependent behaviors and sex role test scores. It may be that sex role differentiation tests are better measures of "masculinity" than of "femininity," or, as some have suggested, that the feminine role is not as strictly defined as is the masculine role.

As I mentioned earlier in the paper, 152 subjects were included in the present analysis. Our next step is to replicate these findings on our larger sample and to study, in depth, the measures, themselves. But this is just the beginning of our analyses of these data. To say that we have found differences

does not explain these differences. Nor does it say anything about individual differences, nor about the fact that all of the categories of behaviors were observed in both boys and girls. Our study has data pertinent to all of these issues. Future analyses by our research team (myself, Dr. Noel Dunivant, and Dr. Barbara Suter) will deal with these issues and with an examination of the causes of such differences and similarities. But the point made here is that before proceeding to such questions, it is incumbent upon us all to carefully investigate the instruments we use in our research.